U.S. Department
of Transportation
**Federal Highway
Administration**

Intermodal Surface Transportation Efficiency Act

FHWA

1993 Stewardship—Program Accomplishments

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March 1994

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Dear Colleague:

The Federal Highway Administration (FHWA) celebrated a century of service to the Nation in 1993. At the same time, 1993 represented the FHWA's second year of implementing the groundbreaking Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA).

In early 1993, Secretary of Transportation Federico Peña identified five broad themes for the Department of Transportation (DOT) to help rebuild America and prepare our Nation for the 21st century. Listed below are the themes identified by Secretary Peña in 1993. This report focuses on FHWA's efforts in addressing these themes.

- Strengthen transportation's role in supporting the economy;
- Promote the safety of our transportation systems;
- Strengthen the linkage between transportation and environmental policy;
- Advance U.S. transportation technology and expertise; and
- Foster intermodalism.

In January 1994, Secretary Peña expanded upon these five themes in the Department's Strategic Plan, creating seven strategic goals for DOT which now include two new themes that focus on the human aspects of both the transportation system and the DOT.

Building upon a strong foundation established through 100 years of achievement and service coupled with a rich array of ISTEA surface transportation programs, the FHWA and the transportation community took important strides in 1993 toward achieving the themes articulated by the Secretary. The ISTEA gave us the tools to accomplish these goals—allowing for the opportunity to channel

innovative thinking, harness technology, strengthen old partnerships and build new ones, and to blend business, labor, government, and the environmental and education communities into a united force for economic growth and job creation through improved surface transportation. Most significantly, the FHWA and DOT met the congressional deadline for submission of a National Highway System intended to serve as the backbone of America's intermodal transportation system into the 21st century.

The report highlights major efforts by the States, local communities, and others in implementing the ISTEA and in advancing the broad themes noted above. For additional information on any of these efforts please contact the appropriate State, FHWA field offices, or FHWA Headquarters program office. We applaud these significant/innovative efforts and hope they will serve as a springboard for future activities directed at implementing the ISTEA and advancing transportation service in this country.

Sincerely yours,

Rodney E. Slater
Federal Highway Administrator

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List of Abbreviations and Acronyms

AAA	American Automobile Association
AASHTO	American Association of State Highway and Transportation Officials
CAAA	Clean Air Act Amendments of 1990
CALTRANS	California Department of Transportation
CDL	Commercial Drivers License
CMAQ	Congestion Mitigation and Air Quality
CO	Carbon Monoxide
COE	U.S. Army Corps of Engineers
DBE	Disadvantaged Business Enterprises
DBESS	Disadvantaged Business Enterprises Supportive Services
DOT	Department of Transportation
DSB	Donor State Bonus
EPA	Environmental Protection Agency
ER	Emergency Relief
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Admininstration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FY	Fiscal Year
GNP	Gross National Product
GPR	Ground Penetrating Radar
HBRRP	Highway Bridge Replacement and Rehabilitation Program
HITEC	Highway Innovative Technology Evaluation Center
HTF	Highway Trust Fund
IDEA	Innovations Deserving Exploratory Analysis
IRS	Internal Revenue Service
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991

IVHS	Intelligent Vehicle Highway Systems
LTAP	Local Technical Assistance Program
LTPP	Long-Term Pavement Performance
MARAD	Maritime Administration
MOA	Memorandum of Agreement
MPO	Metropolitan Planning Organization
NAFTA	North American Free Trade Agreement
NHI	National Highway Institute
NHS	National Highway System
NHTSA	National Highway Traffic Safety Administration
NQI	National Quality Initiative
OST	Office of the Secretary of Transportation
QC/QA	Quality Control/Quality Assurance
R&D	Research and Development
SCS	Soil Conservation Service
SHRP	Strategic Highway Research Program
SIP	State Implementation Plan
SPA	Seismic Pavement Analyzer
STP	Surface Transportation Program
TRB	Transportation Research Board
WZTC	Work Zone Traffic Control

Accomplishments Supporting DOT's 1993 Themes

I. Strengthen Transportation's Role in Supporting the Economy

A competitive, growing economy requires a transportation system that can move people and goods quickly and efficiently. Transportation must be a means of encouraging our full economic potential while not constraining growth. With 17 percent of our Gross National Product (GNP) now being spent on transportation and related activities, efforts are being made to increase the mobility, efficiency, and effectiveness of the Nation's highway systems. This will promote our economic competitiveness and our ability to create jobs in the future. The Federal Highway Administration's (FHWA) specific actions during 1993 in support of this goal include:

A. Investment

Adequate investment in our transportation facilities is essential to achieving a transportation system that will strengthen our economy. During 1993 strides were made in increasing the investment in our Nation's highways. The Administration's commitment toward infrastructure investment was illustrated by President Clinton's Economic Stimulus proposal. Although it was not enacted by Congress, the proposal was designed to increase the Federal-aid obligation limitation to the fully funded level of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). Also, actions throughout the year resulted in more revenue flowing to the Highway Trust Fund (HTF), which provides the basis for our funding level.

1. Level of Investment

a. Obligations in Fiscal Year (FY) 1993

The obligation ceiling, set by the 1993 Department of Transportation (DOT) Appropriations Act, was $15.3 billion, and with the $180 million bonus ceiling, amounted to $15.5 billion for the year. This fell short of the $18.303 billion level which was the ISTEA level.

Listed in Table 1 are the obligations, as of September 30, 1993, incurred for the major Federal-aid highway program categories. Included in these obligation totals is $714 million that was used flexibly, that is, transferred from highways to transit. In addition to the obligations listed, approximately $1.9 billion was obligated for programs (minimum allocation, emergency relief, demonstration projects, and other miscellaneous programs) exempted from the obligation limitation.

b. FHWA Efforts to Increase Investment

During the year the FHWA undertook and supported a broad range of activities designed to enhance capital investment.

Table 1. Fiscal Year 1993 Obligations and Percentages Used by Program Categories

Program	Obligations	Percent of Funds Available
National Highway System (NHS)	$3.3 billion	88.3 percent
Surface Transportation Program (STP) and Hold Harmless	$3.9 billion	62.7 percent
• STP over 200,000 population	($699 million)	(40.3 percent)
• STP under 200,000 population	($357 million)	(76.6 percent)
• STP under 5,000 population	($513 million)	(68.7 percent)
• STP flexible	($1.96 billion)	(81.2 percent)
• Other	($413 million)	(31.1 percent)
Highway Bridge Replacement and Rehabilitation Program (HBRRP)	$1.63 billion	53.4 percent
Interstate	$1.03 billion	47.8 percent
Interstate Maintenance	$2.26 billion	80.7 percent
Congestion Mitigation and Air Quality (CMAQ)	$601 million	41.8 percent
Donor State Bonus (DSB)	$328 million	51.4 percent
• DSB over 200,000 population	($29 million)	(22.4 percent)
• DSB under 200,000 population	($44 million)	(42.3 percent)
• DSB Flexible	($255 million)	(62.9 percent)

Table 2. Fiscal Years 1992–1994
Federal Highway Obligations
(dollars in millions)

Program	FY 1992	FY 1993	FY 1994 (est.)
Interstate Construction	2,549	1,034	
Interstate 4R/Maintenance	1,899	2,266	
Interstate Substitute	369	139	
Bridge Program	1,799	1,626	
National Highway System	2,894	3,295	
Surface Transportation Program	3,036	3,942	
10% Safety	(21)	(298)	
10% Transportation Enhancement	(79)	(115)	
Urbanized Areas	(233)	(1,056)	
Under 5,000 Population	(395)	(513)	
Flexibility & Other	(2,308)	(1,961)	
Donor State Bonus	277	328	
Congestion Mitigation	340	601	
Federal Lands	376	141	
Primary Program	734	41	
Secondary Program	268	36	
Urban Program	283	95	
Safety Program	206	83	
Other Programs	1,025	1,794	
Subtotal, Obligation Limitation	**16,055**	**15,507**	**17,590**
Minimum Allocation	1,050	939	1,261
Emergency Relief	457	493	365
ISTEA Demos	145	495	600
Other Demos	105	114	280
Subtotal, Exempt	**1,757**	**2,041**	**2,506**
Total, Federal-aid	**17,812**	**17,548**	**20,096**
Other Funds	637	778	193
Grand Total FHWA	18,449	**18,326**	**20,289**

The FHWA's proactive approach to identification, development, and discussion of policy and financial options is based on ISTEA's spirit of innovation in an effort to address a highway investment "gap" estimated in the $15 billion range annually. The FHWA technical support and analyses was used in supporting the record high $17.590 billion Federal-aid highway obligation ceiling enacted in the FY DOT Appropriations Act for FY 1994. Some examples of the FHWA's effort to increase investment and performance included:

- Of major importance was the issuance of the Department's biennial report Status of the *Nation's Highways, Bridges, and Transit* in March 1993. This congressionally required report provides capital investment benchmarks for use in evaluating Federal program and budget options, as well as providing highly detailed system performance and finance trends. This version marked the first time highway and transit investment analyses have been reported within a single document.
- In an effort to help the highway and overall transportation community make full use of conventional and innovative bond financing mechanisms and ISTEA public-private provisions, the FHWA sponsored or co-sponsored the following conferences (1) "Bond Financing and Transportation Infrastructure—Exploring Concepts and Roles," September 1993 and (2) "Overcoming Barriers to Public-Private Partnerships for Highway Development," December 1993.
- The FHWA conducted or supported policy-related research and analyses on a wide range of financing topics including alternative highway financing mechanisms, innovative State funding techniques, and potential impacts of loan and credit enhancement on highway programs levels.

2. Trust Fund Revenues

a. Secure 2 1/2 Cent Motor-Fuel Tax Increase

In an effort to achieve full funding of ISTEA, the Administration strongly supported the dedication and extension of the 2 1/2 cent motor-fuel tax currently being paid into the General Fund for deficit reduction. The Administration's efforts resulted in the 1993 Omnibus Budget Reconciliation Act which extends the tax until 1999 and dedicates it to the HTF for infrastructure improvements beginning October 1, 1995.

b. Reduction in Tax Evasion

The HTF loses considerable revenue each year because of motor-fuel tax evasion. Losses to the HTF from gasoline and diesel fuel tax evasion could well exceed $1 billion annually. In FY 1993, nine regional motor-fuel tax enforcement task forces were meeting on a regular basis. Forty-seven States joined one or more of the task forces. In addition, the Federation of Tax Administrators adopted an 11-point plan for uniformity to improve fuel tax administration and cooperative State efforts to fight fuel tax evasion. Six basic motor-fuel training courses were presented with over 600 participants from State and Federal agencies.

Investigators from the DOT Office of Inspector General, along with the Internal Revenue Service (IRS), the Department of Justice, and the States cooperated in motor-fuel tax criminal investigations. The indictments handed down this year alone in Federal cases show fuel tax evasion losses of over $200 million. Results of IRS examination efforts in the nine lead States yielded returns of nearly $40 in additional tax assessments for every dollar spent. The States report additional tax assessments averaging $14 tax assessed per dollar spent.

★ On April 6, 1993, Colorado, Wyoming, and Montana, along with the IRS, shut down a major tax evasion organization, the well publicized MaxOil scam, for alleged nonpayment of at least $7 million in fuel taxes.

★ On May 5, 1993, members of a Russian-Emigre and the Gambino organizations were indicted in New Jersey for fuel tax evasion involving more than $66 million in State and Federal fuel tax revenue.

★ On June 30, 1993, in the single largest case yet indicted, eight individuals operating in New York and New Jersey were charged with conspiracy to evade over $85 million in fuel taxes.

B. Program Initiatives

Securing the maximum level of funding is an important element in improving transportation, but another equally critical aspect is making better use of those funds through a variety of actions, including improved management and new program initiatives. Listed below are some of these important activities carried out during the year.

1. Development of the National Highway System (NHS)

On December 9, 1993, Secretary Federico Peña and FHWA Administrator Rodney E. Slater unveiled the proposed NHS at Union Station in Washington, D.C. The NHS national and State maps and accompanying report to Congress were also released that day. The report recommended a system of nearly 255,886 kilometers (159,000 miles) which serves a large percentage of the Nation's highway travel and associated strategic priorities such as defense and commerce. Development of the proposal involved the States, localities, and other modal agencies.

★ A functional reclassification of all public roads and streets was completed during the year which established a strong planning basis for the NHS. Each State adjusted urbanized area boundaries as appropriate and updated the functional reclassification of public highways within its boundaries.

★ States, in cooperation with the metropolitan planning organizations (MPOs), regional transportation planning agencies, Indian tribal governments, public interest groups, and other local agencies, developed their proposals for an NHS within their borders and submitted these proposals to the FHWA.

★ The FHWA, in finalizing the proposed NHS, worked closely with other DOT agencies. The Federal Transit Administration (FTA), Federal Aviation Administration (FAA), Federal Railroad Administration (FRA), and Maritime Administration (MARAD) have provided the FHWA with lists of major intermodal facilities which were displayed on the NHS maps in the report to Congress.

2. National Quality Initiative (NQI)

The FHWA initiated Demonstration Project 89, *Quality Management*, in 1990 to address the need for additional emphasis, on a nationwide basis, on quality of construction and quality control/quality assurance (QC/QA) programs. One of the results of this project was the development of a joint steering committee in 1992 to focus national attention and guide future efforts on the issue of quality in the highway industry.

As a followup effort to the November 10, 1992 national seminar, four regional seminars were held during April and May of 1993. These seminars were directed at the middle to top management level of both the public and private sectors. Nearly 1,300 management personnel attended these sessions.

To sustain the momentum of the NQI, and to complete the circuit of providing seminars for each of the three levels of State and private sector employees, a third major effort began in the late fall of 1993. This effort was to conduct State-level NQI seminars in each of the States that are directed to project level employees. The NQI steering committee, through the FHWA, has provided reference materials and technical assistance to steering committees of each State-level seminar.

★ *The American Association of State Highway and Transportation Officials (AASHTO) QC/QA Specifications*—The FHWA provided significant support to the AASHTO Subcommittees on Construction and Materials on a joint task force to develop AASHTO QC/QA guide specifications.

3. Stewardship Efforts

The FHWA continued its strong encouragement to the States to take maximum advantage of the opportunities available to them to achieve project efficiencies by exempting themselves from Federal (FHWA) project oversight. Ninety-five percent of the States elected to use this exemption on projects off the NHS. In addition, over half of the States exempted themselves from the FHWA oversight on low-cost NHS projects. Nearly half the States used the certification acceptance process, which existed prior to ISTEA enactment, to limit the FHWA's role on higher-cost, non-Interstate NHS projects. The FHWA's goal is to have all States using some form of oversight exemption within 2 years. Other FHWA efforts in 1993 were:

- Revise Sampling and Testing Regulation—A task force was created to study the current sampling and testing regulations. The specific objective was to develop a policy recommendation regarding limits of use of contractor performed sampling and testing. The study was completed and a final report issued on July 1, 1993. The report concluded that the FHWA's written policies on sampling and testing should be consolidated into a single document which allows Contractor Performed Sampling and Testing in a well defined and controlled Quality Management system for project acceptance.
- Specification Approval Review—The FHWA performed a process review on the approval of State construction specifications. The review covered seven States and six of nine regions. The final report was recently issued.
- Pavement Condition Policy—The FHWA developed and issued a policy that prescribed Interstate pavement condition criteria for pavement smoothness, rutting, and faulting. This criteria was used to evaluate the condition of a State's pavements prior to acting on a State's request to transfer Interstate Maintenance funds in excess of 20 percent of its apportionment.
- The Office of Right-of-Way issued a "Right-of-Way Stewardship Guideline" to all field offices recommending

deletion of several FHWA approval actions previously considered mandatory. This was followed up with an Advanced Notice of Proposed Rulemaking titled "Removal of Obsolete and Redundant Right-of-Way Requirements."

- The FHWA, in cooperation with the States, initiated the Financial Management Improvement Program to enhance the FHWA/State financial management at the national, regional, and local levels.

★ The California Department of Transportation (CALTRANS) and the FHWA developed procedures in early 1993 allowing local agencies to certify the design on a project-by-project basis and eliminate State required plans, specifications, and estimates review.

★ By utilizing a joint FHWA/State total quality management team, the FHWA assisted New Mexico in establishing a Program Oversight Division in the New Mexico State Highway and Transportation Department.

4. Disadvantaged Business Enterprises (DBE)

The DBE Program's main objective is to ensure that DBE firms have the maximum opportunity to participate in DOT funded contracts. Providing assistance in achieving this objective, the DBE supportive services (DBESS) program provides a variety of services and activities designed to increase the total number of minority and women-owned businesses active in the Nation's highway programs; and to contribute to the growth and eventual self-sufficiency of these businesses so that they may achieve proficiency to compete, on an equal basis, for contracts and subcontracts. The types of programs appropriate for DBESS funds include training, and technical, managerial, and financial assistance.

★ The FHWA, in August 1993, executed a contract through the Region 4 office with the Kentucky State University to provide services and activities designed to increase the number of minority and women-owned businesses active in the Nation's highway program. The intent was to provide assistance to these firms so they can grow to become self-sufficient and have the ability to compete for contracts and

subcontracts. Kentucky State University will be working with the States in Region 4 to either expand the existing programs or to develop a program if none exists at the historically black colleges and universities in the individual States.

★ The FHWA funded an Indian outreach effort in several States during 1993. This initiative was targeted to obtain more Native American firms involved in the DBE program and highway construction.

5. Conversion of the Federal-Aid Program to Metrics

Significant activities, both internal and external, have been undertaken to assist our partners/customers in converting programs to metric units of measure. Presentations were made at numerous meetings with AASHTO, industry and professional organizations. Five regional conferences were held to keep our field offices and State DOT's informed of progress being made. Projects were initiated to convert existing manuals and computer software to the metric units of measurement.

6. Bridge and Pavement Management Efforts

Since the mid 1980s, the FHWA has been promoting the use of bridge management principles and bridge management systems to assist in determining the most effective use of Federal, State, and local funds available for maintaining, repairing, rehabilitating, and replacing bridges. The FHWA developed training courses to assist local agencies in developing Pavement Management Systems to meet their individual needs and to meet other ISTEA requirements. This effort was given major impetus by ISTEA mandating States to implement bridge management programs for bridges on and off Federal-aid highways.

★ A further cooperative program with States resulted in the development of computer software (Pontis) for bridge management systems, to which 38 States have subscribed.

★ Technical assistance through meetings and training courses was provided by the FHWA to guide and train bridge inspectors and bridge management system users in the

accumulation of inspection data and the use of that data to develop a program of bridge projects.

7. Emergency Relief (ER) Program

The ER Program provides a special source of Federal funds for repair of Federal-aid highways and roads on Federal lands damaged by natural disasters or catastrophic events. During FY 1993, $413 million in ER funds was obligated for costs of continued highway repair efforts on previous disasters, such as replacement of the Cypress Freeway damaged by the 1989 Loma Prieta Earthquake, plus initial repair efforts on 20 new occurrences in 18 States that were declared eligible for ER funding during the year. The Midwest flooding in 1993 was of unprecedented magnitude, and more than $115 million in ER funding has been provided to the nine involved States for repair of Federal-aid highways damaged by the heavy rains and flooding.

The FHWA remains committed to streamlining the ER funding process. When pressing needs arose during the Midwest flooding, within 48 hours the FHWA responded to State's initial requests for ER funding. FHWA's staff assisted the States and supported the Federal Emergency Management Agency (FEMA) in their highway recovery efforts.

8. North American Transportation Initiative

With congressional ratification of the North American Free Trade Agreement (NAFTA), the DOT embarked on a new phase of implementation, requiring coordination across the breadth of activities associated with the anticipated change in the character and magnitude of trade and transportation. The FHWA staff has played key roles in assessing the potential for improved transportation efficiency and preparing to operate our programs in a NAFTA world.

- The FHWA led a departmental team in completing a congressionally required report on International Trade Corridors and Border Crossings in response to Sections 1089 and 6015 of the ISTEA. This report provided detailed information on patterns of North American trade, trends in international trade and traffic flow, highlights

infrastructure and institutional challenges, and opportunities to improve international trade. The report will be used to evaluate program options for administering the approved NHS to support international trade needs. The report was also a catalyst for coordinating a government-wide response to improve operating efficiencies at and near our international borders, to focus attention on border infrastructure deficiencies, and to promote coordinated, cross-border planning and programming of transportation improvements.

- As part of the Department's U.S./Mexico Transportation Working Group, the FHWA staff continued to provide leadership and technical support on a variety of issues, which will continue under NAFTA. In the area of Commercial Drivers Licenses (CDL), the U.S. DOT and Mexico signed a Memorandum of Understanding on November 21, 1991, establishing reciprocity of the U.S. CDL and Mexico's Licencia Federal. Currently, the Office of Motor Carriers is working with Mexico to develop a compatible electronic means to transfer commercial driver information in a timely, efficient manner. In the area of Vehicle Standards, the FHWA is continuing discussions with Mexican government representatives to make the standards compatible, and to provide assistance and training to the Mexican government on the U.S. safety standards and enforcement practices, and is working with the States and industry to ensure smooth implementation of the access provisions of NAFTA. These activities are being coordinated with Canadian government representatives.

II. Promote the Safety of Our Transportation Systems

Ensuring and promoting the safety of our Nation's transportation systems is a primary responsibility of both the DOT and the FHWA. For the FHWA, this includes efforts to improve motor carrier safety, Federal-aid highway funding, and other actions leading to improvements in highway safety. The FHWA's actions during 1993 in support of this goal include:

A. Highway Safety Programs

The Administration is committed to reducing the number and severity of traffic-related crashes on our Nation's highways. The 1992 national fatality rate of 1.8 fatalities per 160.9 million vehicle kilometers (100 million vehicle miles) of travel is the lowest yet measured. The FHWA and National Highway Traffic Safety Administration (NHTSA) are encouraging the development and implementation of programs in each State that have high potential to further reduce this rate.

The FHWA has striven to reduce fatalities through a number of initiatives such as improved safety management systems, CDL Program, deployment of the Intelligent Vehicle Highway Systems (IVHS) program, an enhanced Motor Carrier Safety Assistance Program, and the Community/Corridor Traffic Safety Program. The FHWA has worked cooperatively with NHTSA and other safety partners to address safety issues. Examples of projects initiated by the States during 1993 were:

★ The FHWA, in cooperation with NHTSA, Alabama DOT, Alabama Department of Education, Alabama Department of Public Safety (State troopers), Alabama Marine Police, local governmental and law enforcement officials, private sector, and the medical community developed the Talladega County Pilot Safety Project. The project employed a comprehensive approach to safety improvement involving engineering, enforcement, education, and emergency medical services. The results in 1993 showed a 35 percent reduction in fatalities and an 18 percent reduction in accidents.

★ South Carolina DOT developed a comprehensive public education and enforcement campaign designed to inform the motoring public of the dangers inherent in running red lights and selected

Charleston as the pilot site to test the creative concepts prior to national implementation.

★ North Carolina continued its highly successful Highway Safety Exposition Trailer, which is a mobile exposition bringing a safety message directly to drivers throughout the State. This exposition won an award at the 1993 State Fair for best "noncommercial" exhibit.

★ South Carolina conducted a "Safety Blitz" which is an informational and educational joint effort of the FHWA, the South Carolina Department of Public Safety, and the South Carolina Department of Highways and Public Transportation and has been displayed throughout the community.

★ In cooperation with NHTSA, the FHWA prepared *Pedestrian Safety Resource Kits* and distributed these to all FHWA and NHTSA field offices, as well as Governors' Highway Safety Representatives and State Highway Agency Pedestrian/Bicycle Coordinators.

★ A working group was established with representatives from NHTSA, the FHWA, Wyoming DOT, Wyoming Highway Patrol, Wyoming Trucking Association, and the Wyoming trucking industry to examine different accident and report filing systems as well as how trucks are defined.

B. Motor Carrier Safety

The FHWA's motor carrier program continued to have a positive impact on commercial vehicle safety. The fatal accident rate for medium and heavy trucks has dropped from 4.1 per 160.9 million kilometers (100 million miles) of travel in 1982 to 2.5 in 1992. Twenty-three rules and notices were published involving CDL waivers for diabetes and vision impairments, revising and extending the scope of drug and alcohol rules, implementing the radar detector ban, and establishing rules for permits and transportation of hazardous materials. In addition, the FHWA submitted a 5-year motor carrier research plan to Congress, established methods to identify hazardous material shippers and manufacturers of cargo tanks for educational assistance and compliance reviews, and implemented ROADCHECK '93 which

involved a short-term concentrated inspection effort of 53,753 drivers and vehicles.

Other initiatives involving the Office of Motor Carriers in 1993 include:

- Conducted 1.6 million roadside inspections and 21,000 carrier reviews using Federal and State staffs;
- Made 88 drug seizures totaling $400 million under the Drug Interdiction Program;
- Developed a Commercial Vehicle Operational plan for IVHS;
- Awarded $1 million in research and development grants to study new innovative roadside inspection devices such as brakes, dynamometers, laser heat sensors, and friction pads;
- Began piloting of a Geographic Information System in Region 3 which will provide the means to identify areas of heavy carrier concentration enabling more efficient allocation of resources;
- Negotiated CDL reciprocity agreements with Canada and Mexico;
- Inspected all U.S. cargo tank manufacturers for compliance with design specifications. The FHWA's bridge engineers assisted in the inspection;
- Conducted a Washington, D.C. safety forum to develop ways to improve highway safety on the Capital Beltway; and
- Conducted pilot tests to determine the feasibility of conducting random drug and alcohol tests at the roadside.

★ The FHWA conducted a 2-day awareness program entitled "Living With Trucks in 1993" at the rest area on Interstate 24 near Chattanooga, Tennessee.

★ Maryland initiated a "Share the Road" public outreach campaign to educate the motoring public on how to share the road safely with trucks.

★ The FHWA conducted 11 public forums to obtain information on how to establish a comprehensive set of performance-based safety requirements to enhance commercial motor vehicle safety.

C. Design and Safety Standards

The FHWA continued its close cooperation with AASHTO and assisted in efforts to develop and revise standards, policies, and guides for highway geometric and roadside safety design. As a result of these efforts, the FHWA was able to adopt officially the AASHTO publication, *A Policy on Design Standards—The Interstate System*, and designate appropriate parts of *A Policy on Geometric Design of Highways and Streets* as applicable to designing projects on the NHS.

The FHWA's emphasis in 1993 regarding roadside safety designs is reflected in: adoption of revised criteria for testing roadside hardware that takes into account a full range of vehicles from small cars to much larger vehicles, encouragement to use innovative median barriers, where appropriate, to improve safety and implementation of new technology, and 15 presentations to State and local highway agencies of a National Highway Institute (NHI) Roadside Safety Design course. The FHWA also issued comprehensive guidance on the changes and applicability of design standards under ISTEA.

★ Indiana implemented a policy that requires construction and maintenance personnel involved in the installation or repair of guardrail terminals to be certified through testing and training.

★ Georgia strengthened their requirements for the use of sand-loaded module impact attenuators as temporary attenuators on construction projects.

★ Ohio and Texas implemented a policy to replace obsolete, turned-down w-beam guardrail terminals on high speed, high volume roads with safer, more modern terminals and revise their construction standards accordingly.

D. Work Zone Safety

The FHWA has continued its emphasis program on Work Zone Traffic Control (WZTC) in 1993. As a result we have seen a reduction of work zone fatalities in the past 2 years. Some of the continued emphases are to encourage, support, and participate in field reviews of work zones, including night reviews; promote the installation of retroreflective devices that are adequate for effective day and nighttime use; encourage State highway

agencies to try some of the more innovative methods to reduce speed in work zones; and, continue to provide training on the design of traffic control plans and encourage development of specific plans and details for WZTC, especially on complex projects.

★ Virginia DOT issued a policy to require the use of fluorescent prismatic sheeting on all orange work zone signs, vertical delineator panels, and stop/slow traffic control panels.

★ Training continues at a high level in California's course on construction zone safety, reaching over 1,000 people in 1993.

★ An FHWA exhibit promoting work zone safety was displayed at the American Traffic Safety Services Association's Annual Convention and Traffic Exposition. Over 900 participants viewed the FHWA exhibit, which featured several Strategic Highway Research Program (SHRP) work zone safety devices.

★ CALTRANS launched a campaign to educate motorists on the critical need to drive safely in construction zones. The "Avoid the Cone Zone" incorporates a "twilight zone" theme and is featured on radio ads and billboards.

★ Research is underway to develop and evaluate condition-responsive work zone traffic control systems and operations for use in long-term construction areas in Maryland.

III. Strengthen the Linkage between Transportation Investment and Environmental Policy

Transportation has a significant impact on the environment and the quality of life. Whether this impact is positive or negative depends on how activities are managed. Sound surface transportation planning, management, investment strategies, and regulatory actions can enhance the environment and mitigate environmental damages. The FHWA fosters environmental improvements by closely coordinating its actions with the Environmental Protection Agency (EPA) and other Federal environmental agencies. Also, the FHWA strongly encourages State and local transportation officials to identify environmentally sound transportation alternatives and to target investments toward projects that improve air quality. The FHWA's actions during 1993 in support of this goal include:

A. Clean Air Act Implementation

The FHWA has worked extensively in cooperation with the EPA and other Federal agencies on implementation of the 1990 Clean Air Act Amendments (CAAA). The CAAA have had significant impact on transportation planning.

Most notably, the CAAA require that transportation plans, programs and projects conform to the purpose of State Implementation Plans (SIPs) for air quality betterment. In order to ensure this, the FHWA worked with the EPA and the Federal Transit Administration (FTA) to develop a rule implementing this "conformity" provision. The rule, issued by EPA in November 1993, provides comprehensive guidance to States and other levels of government involved in the development of air quality attainment plans.

The FHWA has carried out extensive technical assistance projects to provide other public agencies with the skills and knowledge to undertake the planning and other activities necessary to carry out conformity and other CAAA requirements. These efforts included the sponsorship with EPA and FTA of the 3-year, $1.2 million "Clean Air Project," which has offered broad support on transportation and air quality planning and modeling. The three agencies also have held several series of

workshops nationwide on these issues to provide professionals with the information on the need to implement the CAAA's provisions.

B. Congestion Mitigation and Air Quality Improvement Program (CMAQ)

The FHWA and FTA have worked hard to ensure that the highly innovative CMAQ program is implemented in the full spirit of ISTEA. The program has established and made full use of new partners in setting policies.

The FHWA and FTA produced CMAQ program guidance in consultation with the EPA. A roundtable was held to discuss the CMAQ program with those managing and using the program; participants included representatives from State DOTs, AASHTO, State and local air quality agencies, and MPOs (all FHWA, FTA, and EPA regional offices also participated via teleconference hookup). The FHWA is expanding an outreach program targeted at the present users of CMAQ funds and the general public. A brochure has been developed to explain the program and will be given broad distribution. Also, a National Summary has been developed from FY 1992 reports regarding CMAQ obligations to consolidate and examine the current experience across the country. The FHWA is also expanding current program monitoring activities to ensure that CMAQ funds are being used on the most cost-effective transportation programs and projects for reducing mobile source emissions.

★ Montana transferred $804,800 to the FTA for transit projects in Missoula. Another $1.2 million was used to fund preliminary engineering on a CMAQ project in Missoula and to purchase 14 wet-vacuum sweepers for particulate matter (PM-10) nonattainment areas in Montana.

★ $27 million in CMAQ funds are being used for Boston's South Station Intermodal facility.

★ Chicago has dedicated $750,000 in 1992, $4 million in 1993, and $6 million in 1994 to bicycle and pedestrian improvements.

C. Transportation Enhancement Program

The Transportation Enhancement Program has taken most State DOTs into new territory, dealing more closely with environmental agencies and grass roots community organizations. Transportation enhancement funds were used primarily for bicycle and pedestrian facilities (including rail trails), rehabilitation of historic transportation facilities, and landscaping. To help the States understand enhancement opportunities, the FHWA headquarters is planning a major enhancements workshop that will bring together State DOT officials, FHWA field representatives, and members of the public. This will follow a top-to-bottom program review of the enhancements program aimed at identifying the program's successes and weaknesses. Some examples of successful enhancements projects to date follow:

★ Minnesota acquired a historic stone arch bridge across the Mississippi River in Minneapolis which was rehabilitated and converted to bicycle/pedestrian use.

★ Illinois constructed a 24.9-kilometer (15.5-mile) paved shoulder on an existing route to facilitate nonmotorized traffic (horse and buggy) in an Amish community.

★ In the Puget Sound Area of Washington State, funds were provided for a bicycle and pedestrian trail that will follow the route of the old Interurban Train between Seattle and Everett.

★ Kentucky purchased property to enlarge and better integrate the Perryville Battlefield and the Shaker Community at South Union.

★ Tennessee mapped cycling trails near State parks, natural areas, and for the building of a pedestrian Bicentennial Mall in Nashville.

D. Wetland Banking and Other Mitigation

All FHWA regions have more effectively streamlined the National Environmental Policy Act and Section 404 process requirements. One means of doing this has been to develop General Permits for Section 404 compliance. New DOT wetland banking agreements were approved in Nebraska, Maryland, Wisconsin, Wyoming, and Washington. Several other States are currently pursuing banking agreements and are near approval

(Virginia, New Jersey, and New Hampshire are examples). The Administration has endorsed wetland mitigation banking in its wetland management policy, and FHWA will be working closely with the EPA and the Army Corps of Engineers (COE) to carry out this policy. In addition, the FHWA is working with the States to carry out administrative goals for more local input into wetland management planning, including integrated watershed and regional planning programs. The Administration recently released a new wetland policy initiative, which emphasized flexibility, consistency, and coordination in the Section 404 permitting process.

★ The Puerto Rico Department of Highways and Transportation acquired 234 hectares (578 acres) of farmed wetlands for the mitigation of wetlands taken for the construction of route PR 53.

★ The Michigan DOT advertised and received applications from land owners for wetland creation or restoration on their properties. These replacement wetlands will be used as mitigation for wetlands impacted on the US 27/St. John's Bypass.

★ CALTRANS made significant progress in the construction of the Beach Lake wetlands bank, a 57.5-hectare (142-acre) site located south of Sacramento alongside Interstate 5.

★ Montana DOT established a wetland mitigation project on private property through a coordinated effort with the Soil Conservation Service (SCS) Wetlands Reserve program. Applicants who wanted to participate in the SCS program to have wetlands restored on their property were screened by the Montana DOT, and a suitable mitigation banking site was found for restoration of a prairie pothole type wetland, including supporting upland habitat.

E. Environmental Performance Monitoring

The FHWA increased its technical assistance to State transportation agencies and MPOs and continued the careful review of all draft environmental impact statements to identify and address critical issues. Our staff conducted a nationwide review of the implementation of environmental mitigation commitments. The primary focus of this review was on the efforts being applied by the FHWA Division Offices and State Highway Agencies to

ensure environmental mitigation commitments are implemented on projects for their intended purpose. It was found that with few exceptions, these commitments are being implemented and are enhancing the highway environment as an added benefit of the highway program.

★ Washington State DOT developed a tracking system (database) which provides information for post-construction reviews of environmental commitments.

★ The Mississippi DOT established a Hazardous Waste Section with responsibilities for managing waste and leaking underground storage tank sites and problems as they relate to highway project development.

★ A study in Biddeford, Maine, has been underway to determine the effectiveness of using recycled wood waste material from local mill sources as a soil amendment to substitute for costly, sometimes scarce, loam.

★ Mississippi DOT, the FHWA, and the U.S. Fish and Wildlife Service developed a viable plan to relocate, protect, and develop habitat for colonies of the endangered gopher tortoise, potentially threatened by highway construction in George County.

F. Environmental Research

The FHWA conducted a FY 1993 expanded environmental research program funded at nearly $5 million. The program focused on improving monitoring, prediction, modeling, evaluation, and mitigation of the impacts of highway construction and improvements in air quality, wetlands, water quality, roadside noise, and archaeological and historic resources. Much of the research was conducted in cooperation with other agencies, such as the EPA, Council on Environmental Quality, the Army Corps of Engineers, the Fish and Wildlife Service, the Soil Conservation Service, the National Park Service, the FTA, the National Association of Regional Councils, and the National Governors' Association. For example, the FHWA, in cooperation with the National Academy of Sciences, is undertaking research to develop more accurate methods for predicting the carbon monoxide (CO) concentrations near signalized roadway intersections. Improved analysis methods are needed in CO

nonattainment areas to demonstrate air quality conformity for transit and highway projects.

★ A wetland mitigation area with varying levels of enhancement was constructed in Alabama. Different types of soil treatments and seeding versus plantings of differing sizes were incorporated into the mitigation area. The site will be monitored to demonstrate which practices are most effective in reestablishing wetland function.

★ Replacement of the Manchester Street Bridge over the Merrimack River in Concord, New Hampshire, will require excavation of deposits of coal tar from the river bed and adjacent wetlands. New Hampshire DOT worked with the State's Department of Environmental Services to evaluate alternative incineration and other disposal methods.

★ Funds were provided to Minnesota, Ohio, and Wisconsin to continue their work in the establishment of wildflowers along the highways. The funding is for harvesting native grass seeds, researching salt tolerant native plants, and researching the use of micro-fungi in the establishment of native grasses.

★ A floodplain wetland was restored on the Des Plaines River, near Chicago. The research included monitoring to determine the effectiveness of the wetland in improving water quality of the Des Plaines River, the rate at which ecological and landscape functions were restored, and responses of the wetland to different management schemes. This site is the home of a long-term research project which will continue to provide valuable information about wetlands ecology.

G. National Scenic Byways Program

The FHWA, in developing the National Scenic Byways Program, worked closely with partners from the public and private sectors, including scenic and historic preservation groups and tourism agencies. The States are showing a high level of interest in the program, not only through their requests for financial aid under the Interim Scenic Byways Grant process but also in their requests for technical assistance. For example, Grant requests surpassed the $10 million made available for FY 1992 and FY 1993 by more than double.

The National Advisory Committee, established in ISTEA, completed their work in 1993 and the report describing their work is being developed. The FHWA is currently incorporating their recommendations into the National Scenic Byways program, which officially begins October 1, 1994.

★ The American Automobile Association (AAA) is in partnership with the FHWA for a national scenic byways clearinghouse. The AAA will house information on scenic byways from across the Nation and abroad.

★ The National Trust for Historic Preservation and Scenic America are in the final stages of preparing guidebooks on corridor management plans on scenic byways. The National Trust handbook looks at corridor management plans from the grass roots and non-professional level, while the Scenic America handbook discusses corridor management from the professional's perspective.

★ The States of Washington, Oregon, and California received funding under the Interim Scenic Byways Program to coordinate interstate planning and construction efforts on US-101, a tri-State designated scenic byway.

★ Utah received funds under the Interim Scenic Byways Program to develop interpretive facilities and programs along several scenic byways in the State. These included informational kiosks, wayside exhibits, site interpretation, guidebooks, and video and audio tapes.

IV. Advance United States Transportation Technology and Expertise

The FHWA is committed to the effective use of technology in meeting national transportation objectives. Sound technological investments promote long-term economic growth that creates jobs, protects the environment, and helps make government operate more efficiently. Investing in state-of-the-art technologies can also provide the basis for national leadership in the application of new technologies that ultimately will spur economic growth, and improve mobility and the safety of our transportation systems. The FHWA's actions during 1993 in support of this goal include:

A. Intelligent Vehicle Highway Systems (IVHS) Program

With our partners in State and local governments, universities, industry, and others, the FHWA advanced the testing and deployment of the IVHS to relieve congestion, improve safety, and enhance the environment. Working with these partners we are enabling the marketing and implementation of ready IVHS technologies, including those which are dual-use, or from defense conversion. The IVHS Early Deployment Program was successful in initiating approximately 45 planning grants to metropolitan areas and intercity corridors. These grants are used to develop strategic deployment plans for the local area which analyze and describe the application and deployment of IVHS services to address local transportation needs.

As the lead administration for the national IVHS program within the U.S. DOT, the FHWA is managing a wide range of initiatives. The IVHS program utilizes a comprehensive, "end-to-end" approach to development which includes research and development, investigation of institutional and legal issues, operational testing, and support for early deployment planning efforts. Major program activities during 1993 included an open solicitation for operational test proposals, which resulted in selection of 16 proposals for further negotiation and initiation. The FHWA continued carrying out a large IVHS Research and Development Program, and 15 areas were selected to receive early deployment planning assistance.

Further initiatives resulted in preparation of the first draft of a *National Program Plan for IVHS* in October 1993. Also, a major program to support development of an open, national IVHS architecture was launched, and four contracts were awarded in September 1993 to develop alternative system architecture concepts.

★ The Idaho Storm Warning System is a new rural IVHS project in FY 1993. This project tests visibility sensing equipment to alert motorists of potentially hazardous driving conditions on Interstate 84.

★ The Georgia 400 Extension project was opened to traffic on August 1, 1993. This Federal pilot project involved a combination of Federal and State funds and guaranteed revenue bonds. The facility is a 10-kilometer (6.2-mile), 6-lane highway including a toll plaza and a two-directional rapid rail line in the median. The toll plaza uses Automatic Vehicle Identification technology for nonstop electronic toll collections.

★ During 1993, the data collection phase of the "TravTek" project in Orlando, Florida, was completed. The comprehensive evaluation of this IVHS operational test will be completed in 1994, and early results show that this test of an in-vehicle navigation device was very well received.

★ Also completed in 1993 was the commercial vehicle operations project, "HELP/CRESCENT," which evaluated the benefits utilizing information technologies for commercial vehicle clearances to reduce delays in six western States.

★ In the Washington, D.C. area, an operational test is evaluating the use of the cellular telephone infrastructure to develop traffic flow information and identify incidents through analysis of call statistics and geolocation technologies.

★ A series of traffic management-oriented IVHS operational test projects was initiated in southern California in 1993. Technologies being evaluated include spread spectrum radio to interconnect traffic signals, integration of freeway ramp metering and adaptive arterial signal control, portable surveillance and vehicle detection capabilities, the SCOOT adaptive signal control

system, and use of existing cellular-based call boxes to transmit key traffic and other data.

★ Following ISTEA requirements, four areas of the country were designated by the FHWA as "IVHS Priority Corridors" in March 1993. These areas are the I-95 Northeast Corridor (Maryland to Connecticut), the Midwest Corridor (Indiana, Illinois, and Wisconsin), Houston, Texas, and southern California. These sites will become national test beds for IVHS and in many ways will be where the public is first introduced to IVHS.

★ The FHWA awarded approximately $15 million in precursor system analysis studies of the Automated Highway System and established a Traffic Management Laboratory which will be used in the evaluation of IVHS control strategies and supporting software. The FHWA also initiated an IVHS Innovations Deserving Exploratory Analysis (IDEA) program to solicit and encourage innovations from private industry. Similar programs also exist for other highway technologies and transit.

B. Research and Development (R&D) Programs

A major facet of FHWA's R&D efforts focuses on accelerated testing, evaluation, and implementation of technologies designed to improve the durability, efficiency, environmental effect, productivity, and safety of highway, transit, and intermodal transportation systems.

Also, as part of the FHWA R&D Office, the NHI is responsible for identifying and developing technical training needs of the FHWA, State and local agencies, and private sector, as well as foreign nationals involved in highway work of interest to the United States.

Listed below are a few FHWA highlights that occurred during 1993.

- The FHWA completed research on accelerated weathering test methods for low volatile-organic-compound coating systems for steel bridges. The FHWA incorporated the results of studies to protect bridge abutments from scour into the second edition of the FHWA's Highway Engineering Circular Number 18, *Evaluating Scour at Bridges*.

- Under the guidance of an industry/government task group, contract and staff researchers performed a study requested by Congress as a result of the falsework collapse of the Route 198 overpass over the Baltimore/Washington Parkway in Maryland. The FHWA also developed guidelines for the design and construction of bridge temporary works.
- The FHWA provided laboratory monitoring and technical support to the States for construction and evaluation of European Stone Mastic Asphalt pavements. Also, the FHWA awarded contracts totaling $12 million to continue operating four regional Long-Term Pavement Performance (LTPP) offices, to provide pavement engineering technical support, to conduct pavement distress surveys, and to support Transportation Research Board (TRB)/SHRP activities.
- The NHI developed 14 new courses in FY 1993. Over 500 course presentations were made in the United States and its territories, with an additional 20 presented at international sites. An enhanced highway safety education/training program is underway at the NHI that will provide renewed emphasis to the importance of highway safety and the role the highway plays in reducing fatalities and personal injury accidents. The 88 safety course presentations in FY 1993 reached nearly 3,000 participants.

★ Tennessee made strategic use of private firms to move to the forefront in automated road inventory and the use of Global Positioning System (GPS) technology.

★ The FHWA/NHTSA National Crash Analysis Center is now fully operational at its site at the George Washington University Northern Virginia campus. Through crash tests, the FHWA verified three timber bridge rails that met the criteria of "performance level one" of the 1989 *AASHTO Guide Specifications for Bridge Railings.*

★ Indiana DOT and the FHWA worked together to promote the New Accelerated Pavement Test Machine developed by Purdue University and Indiana DOT.

★ $1.1 million in Federal funds are supporting the Minnesota Test Road project that will rival the AASHTO Road Test which was

performed over 30 years ago. Currently, this 20-year research project is undergoing checking and calibration of instruments prior to routing interstate traffic on the new section of instrumented roadway.

★ On October 15, 1993, an agreement was signed by the Idaho Transportation Department, the FHWA, the Idaho Engineering Laboratory, and the University of Idaho which will guide the resources of the four groups in the development and implementation of advanced transportation research.

★ The FHWA provided $3 million to NHTSA to conduct operational tests of longer combination vehicles to determine if safety standards should be modified.

C. International Technology Scanning

The FHWA formally established an International Technology Scanning Program in cooperation with AASHTO and TRB. The objective of the program is to find advanced research and technology abroad which can be applied in the United States and will provide a better-quality, more cost-effective highway product. The approach is similar to the "benchmarking" process that is widely used among major firms in the private sector. Benchmarking consists of comparing an organization's methods and products to the world's best and then striving to match or exceed them.

In 1993, scanning team trips dealing with construction contract administration techniques for quality enhancement, intermodal transportation planning, and bicycle/pedestrian safety were undertaken. Teams included representatives from the FHWA, AASHTO, State and local governments, and industry.

★ The United States scanning study team consisting of representatives from the FHWA, AASHTO, and industry traveled to Europe to review Portland Cement Concrete pavement technology. The study team visited Austria, Belgium, France, Germany, and The Netherlands. As a result of this effort, a section of concrete road was built in Michigan using technology found by the study team. This demonstration project was reviewed by many highway officials during the annual AASHTO meeting in Detroit.

★ Some of the technologies found on a Pedestrian/Bicycle Safety Study Tour will be included in the Minnesota "Hutchinson Project." This project illustrates enhanced safety for pedestrians and bicyclists.

★ The State of California and the Mexican State of North Baja California are analyzing the challenges encountered in advancing a cross-border planning process in the San Diego-Tijuana metropolitan area. The work will allow the integration of planning data collection and analysis procedures for the area.

★ Technology for cold weather construction and permafrost construction techniques were shared with Canada in construction on the Alaska/Canada Highway.

★ A nine-member study team composed of Federal, State, and local highway and transit officials visited Barcelona, Spain, to gather information on the efforts by the Spanish and Barcelona governments to facilitate vehicle and pedestrian transportation at their recent Olympic Games.

D. Local Technical Assistance Program (LTAP)

The rural technical assistance program was expanded under the provisions of the ISTEA to become the LTAP and to provide technology transfer services for Indian tribal governments. The FHWA provided funding for the establishment of a national network of technology transfer centers (one in each State and in Puerto Rico) to provide training and technical assistance to the local highway agencies. In addition, the FHWA and the Bureau of Indian Affairs have worked together to establish four new technology transfer centers to serve the needs of American Indian tribal governments. Examples of other activities include: a contract on pavement management systems for LTAP audiences, cooperative work with the U.S. Department of Agriculture on travel and tourism for economic development, and a National Conference on Bridge Management Systems.

Under the LTAP, technology transfer centers serve the more than 37,000 local units of government nationwide by providing technical assistance, training, videotapes, and publications. A benefit/cost analysis shows a return of $8.53 for every Federal dollar invested.

★ California's program, managed by the University of California at Berkeley, provided approximately 100 training courses with total enrollments of 2,000 students.

★ North Carolina's Technology Transfer Center was awarded a project to provide transportation planning assistance to the Cherokee Indians located in Cherokee, North Carolina.

★ South Carolina DOT, working closely with the FHWA and South Carolina University, a historically black college, developed a 4-week Summer Institute.

E. Strategic Highway Research Program (SHRP) Implementation

The ISTEA recognized the potential for the benefits of using the projects developed under SHRP and provided funding to the FHWA ($108 million) for the implementation of the products to address major highway problems in the areas of asphalt, pavements, concrete and structures, and highway operations, as well as for continuation of the LTPP project. A comprehensive national strategy for the implementation of the SHRP products has been published and technical working groups in each of the technical areas were established to assist in the SHRP implementation. A 50-State pooled-fund study to speed up the purchase and implementation of the SHRP asphalt technology is underway. Promotional activities have included major exhibits of the SHRP products at national and international meetings, continued publication of the SHRP *Focus* newsletter, establishment of a speakers' bureau, and assignment of region and division office SHRP product technical coordinators.

★ Washington State DOT tested and evaluated the Rumble Strips, STOP/SLOW Paddles, and the FHWA Test and Evaluation Project Number 28, *Anti-Icing Technology*.

★ Experimental SP-1 project, on US 280 in Alabama, was completed in October 1993. The project, approximately 9.7 kilometers (6 miles) in length and costing $7 million, incorporated 18 different asphalt pavement typical sections.

★ Mississippi DOT successfully used the "Opposing Traffic Lane Dividers" on an Interstate 20 pavement reconstruction project.

★ Testing and evaluation of the interactive weather prediction system is underway in Colorado, Minnesota, New Jersey, and New York. The system provides local weather information to enable improved snow control operations.

★ Vermont is testing and evaluating the snow scoop. This device is an attachment to plow moldboards for improved snow removal.

★ A comprehensive national test and evaluation program in the area of anti-icing technology was initiated. This program will involve collecting and evaluating data and documenting the States' experiences with anti-icing procedures and their effectiveness. The experimental plan was developed based on the SHRP program. This program will continue the field experiments conducted under SHRP contract H-208 for a period of 2 years.

★ An expert task group was formed to assess the operational capabilities and the state of readiness of the ground penetrating radar (GPR) and the seismic pavement analyzer (SPA). The group visited the principal investigators' facilities in Texas for the SPA and New Hampshire for the GPR.

F. Technology Sharing

The dissemination of technological advances is of highest importance to the FHWA. During the year the FHWA has fostered the sharing of technology that will advance transportation.

The FHWA's bridge experts provided technical assistance and direction for the design and construction of major bridges throughout the Nation and the world. This included the promotion of new concepts and materials such as composites, high strength concrete, and tougher steels. In the area of tunnels, a fire ventilation test program (the first of its kind in the world) was developed to provide the safest, most effective, and most economical tunnel ventilation systems.

★ The first international Pacific Rim TransTech Conference was held from July 25 through July 28, 1993, in Seattle. Cosponsored by Washington DOT and the FHWA, over 1,300 delegates representing 37 countries gathered together to exchange information on the latest transportation research and technology.

★ The FHWA signed a cooperative agreement with the Civil Engineering Research Foundation to establish and administer the Highway Innovative Technology Evaluation Center (HITEC) for 4 years. Then HITEC will become self-supporting. The HITEC is intended to be a nationally recognized service center and clearinghouse for implementing highway innovation. It will evaluate new innovative technologies and help expedite their transfer into practice.

★ The FHWA has been working with Northwestern University to establish the ISTEA mandated Infrastructure Technology Institute. This Institute is currently involved in several research projects, including the continued development of a robotic pothole patcher.

★ The valuation and remediation of right-of-way contaminated with hazardous materials can be a very complex and costly issue. Approximately 20 States have submitted case studies concerning technology applied to contaminated property, and this technology is being shared with every State throughout the country.

★ The FHWA and the EPA cosponsored a symposium entitled "Recovery and Effective Reuse of Discarded Materials and By-Products for Construction of Highway Facilities." The symposium was a forum for the dissemination of information on new and innovative uses for waste materials and by-products in highway construction. In addition to the 27 formal presentations, 13 vendors displayed products using a variety of recycled materials.

G. Technology Applications

The FHWA has also focused on technology transfer—the process to ensure the timely application of innovative research results beneficial to the highway community. Two techniques that have been especially productive in carrying out the technology transfer mission are the use of incentive funding and "hands-on" demonstrations. Incentive funding is made available to encourage State DOTs to construct, assess, and document the results of using innovative technology on their home turf, while the use of the hands-on demonstrations involves taking the innovative technology to States, where the FHWA technical experts facilitate a first hand experience for the user. Examples of major

ongoing activities include Field Management of Concrete and Asphalt Mixes, Stone Matrix Asphalt, Quality Management, Cathodic Protection, Bridge Management Systems, Corridor Safety Improvements, Incident Management, and Traffic Control Equipment and Software. Specific State accomplishments during 1993 are as follows:

- ★ Alabama DOT constructed an experimental project using the patented European product NOVACHIP.
- ★ Alabama DOT implemented a new pile driving specification that includes several new technologies promoted in the FHWA Demonstration Project 66 such as the Wave Equation Analysis Program and the Pile Dynamic Analyzer.
- ★ Federal funds are being used to create a statewide digital map base and database of environmental, historical, and cultural attributes for use by North Carolina DOT in support of various transportation applications.
- ★ Colorado DOT has constructed one of two European Asphalt Laboratories in the country and is actively testing equipment and researching asphalt mixes with these test and design procedures.
- ★ Connecticut has been using Photolog Laser Video technology for several functions, including their pavement management system.

V. Foster Intermodalism

The ISTEA brought to the forefront a new direction in transportation—intermodalism. The ISTEA, through its intermodal provisions, seeks to foster a seamless transportation system of interconnected modes for the safe and efficient transfer of people and goods throughout the country. Intermodalism ensures choice and competition in the marketplace and encourages coordination among transportation organizations to improve service in an environmentally sound manner. Commitment to ISTEA's flexibility provisions is a major part of the FHWA's intermodal effort. In 1993, the FHWA focused on the institutional framework and processes as well as the changes needed to achieve our goal of a National Intermodal Transportation System.

A. Metropolitan and Statewide Planning

In the area of transportation planning, ISTEA requires that both the metropolitan and statewide planning processes be intermodal, that is, consider all modes and the connections between them. The FHWA and FTA placed emphasis on intermodalism in the statewide and metropolitan planning rule published in the October 28, 1993, *Federal Register*. The new rule is necessary to bring existing metropolitan planning rules into conformance with the goals of ISTEA, and to establish rules for the new statewide planning requirements in ISTEA.

In December, the FHWA and FTA began a large-scale outreach effort, held in eight cities across the country, to familiarize all States and MPOs with the new metropolitan and statewide planning rules as well as the congestion, intermodal, and public transportation management system rules.

The FHWA initiated a major effort to develop improved travel forecasting models that will facilitate multimodal evaluation of alternatives. Procedures for making cross modal comparisons of transportation and land use strategies are also being developed.

★ Idaho held a series of 12 planning meetings around the State to solicit ideas and input from the public and local officials.

★ The San Francisco Metropolitan Transportation Commission implemented a project selection process that ranks projects of the alternative modes together.

★ The Santa Theresa, New Mexico, Intermodal Border Crossing Study focused on increased U.S./Mexico trade.

★ Georgia DOT initiated Transportation 2000, which is an advisory commission, in June 1993. The commission's purpose is to look forward and craft a vision of where Georgia's transportation system should be heading in the future. On September 2, 1993, the first of 11 Regional Public Forums was held to gather public opinion regarding the future of transportation for Georgia.

B. Management Systems

Section 1034 of ISTEA amended Title 23, United States Code, *Highways*, by adding Section 303, *Management Systems*, which requires State development, establishment, and implementation of six management systems including systems for managing: Traffic congestion, public transportation facilities and equipment, bridges, safety, pavement, and intermodal transportation facilities and systems. An interim final rule was published in the December 1, 1993, *Federal Register* (58 FR 63441). Three of the management systems (traffic congestion, public transportation facilities and equipment, and intermodal transportation facilities and systems), in particular, will contribute to strengthen intermodalism.

Research is underway to develop CMS prototypes for the following scenarios: statewide areas, transportation management areas—including those that are nonattainment for transportation related pollutants, and nonmetropolitan areas. The prototypes will focus on institutional structure and technical procedures. A generic CMS process will also be developed as part of the project. A final report and handbook will be made available upon completion of the project.

★ The FHWA teamed with the FTA to develop a newsletter entitled *Managing Congestion*. This newsletter is an insert to *Mobility Time* which is developed by the National Center for Regional Mobility at George Mason University.

C. Intermodal Cooperation

The FHWA, in carrying out ISTEA provisions, worked closely with other DOT agencies in the development of the NHS

proposal, and has begun work on the development of a much larger National Transportation System.

- The FHWA, MARAD, FAA, FTA, and the FRA jointly sponsored a TRB Intermodal Transportation Conference. The purpose of the conference was to promote the creation of transportation partnerships between the public and private sectors. The conference proceedings have been published by TRB and have been distributed throughout U.S. DOT, State DOTs and MPOs. The FHWA, in cooperation with the Office of the Secretary of Transportation (OST) and other modes, is working with TRB for a second conference in 1994 to look at case examples of best intermodal practices.
- The FHWA is developing an outreach program with MARAD, FRA, and FAA to begin the process of identifying transportation issues and problems concerning intermodal terminals and access to ports. The FHWA is an active participant on the Intermodal Terminals Committee with other modal administrations, OST, Amtrak, and Greyhound.
- A series of seven regional workshops were held around the country in cooperation with MARAD, FTA, FRA, and FAA to provide training to increase the awareness of States and MPOs on intermodal issues. These workshops addressed strategic issues for the planning of the optimum use of all modes of transportation, including transportation systems of the future.
- The FHWA and FRA developed guidance on the eligibility of rail projects under the major funding programs of ISTEA. The FHWA held a national workshop for ISTEA-mandated and newly designated State Highway Agency Pedestrian/Bicycle Coordinators in March 1993.
- In cooperation with NHTSA, the FHWA has revised *Walk Alert*, a comprehensive community-based pedestrian safety program and held meetings with technical experts from across the country to assist in marketing the program.
- The FHWA organized a working group of real estate specialists within DOT representing all modal administrations and OST. This group will develop and network an agenda of

right-of-way issues of mutual concern where intra-Departmental coordination and cooperation will be beneficial.

★ Georgia DOT, the FHWA, and FTA are involved in the design of a Multimodal Passenger Facility and the Olympic Bus Proposal.

★ The New Jersey and New York DOTs cooperatively initiated a CMAQ funded project to run a "roll on—roll off" barge to carry 18-wheelers from the port of Red Hook in Brooklyn to the port of Newark in New Jersey. It has been estimated that this will initially remove up to 3,000 trucks a week from the city street system in New York City.

★ A multimodal project is proposed in Dade County, Florida, addressing improvements to the East-West Freeway (State Route 836), the extension of the Metro Rail to provide service to West Dade, to the Seaport of Miami and to Miami Beach, and the construction of a multimodal transfer center east of the Miami Airport. Because several U.S. DOT agencies would have permit or funding actions to take on this project, Florida DOT requested that one agency be appointed as the lead Federal agency. In the spirit of U.S. DOT intragency cooperation, it was decided that the FHWA would be the lead Federal agency with various U.S. DOT agencies acting as cooperating agencies due to their special modal expertise. To this end, a Memorandum of Agreement (MOA) was recently signed, establishing the roles and responsibilities of the various modal agencies involved in the development of this project. This MOA should reduce time spent during the project development process.

APPENDICES

Appendix 1

Reports to Congress Mandated by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) Completed in 1993

One-Time Reports

National Highway System (NHS) Designation
Section 1006(a); signed by Secretary 12/8/93.
Proposes to Congress routes to be designated on the NHS.

Functional Reclassification
Section 1006(c); signed by Secretary 12/8/93.
Reports on the State's reclassification of all roads and streets.

Emergency Vehicles
Section 1023(e); signed by Secretary 9/7/93.
Reports on State laws regulating the operation of firefighting vehicles on the Interstate System.

Recycled Rubber Paving Material Feasibility
Section 1038(b); signed by Secretary 6/23/93.
Measures performance, safety, and practicality of using recycled rubber in asphalt pavements.

Fuel Dye and Marking Feasibility
Section 1040(e); signed by Secretary 8/27/93.
Reports on the feasibility of using dyes and markings in fuel tax enforcement activities.

Tourist Oriented Directional Signs
Section 1059(b); signed by Secretary 7/21/93.
Reports State participation in the use of "logo" signs along the Interstate System.

Value Engineering
Section 1091; signed by Secretary 6/17/93.
Reports on the usefulness of value engineering on Federal-aid highway projects.

Eisenhower Commemoration
Section 6012(b); signed by Secretary 1/14/93.
Determines appropriate highway sign symbol to commemorate President Eisenhower's vision in creating the Interstate System.

International Registration Plan (IRP) and International Fuel Tax Agreement (IFTA)
Section 4008(c); signed by Secretary 12/18/93.
Recommends procedures for resolving disputes among States participating in IRP and IFTA.

Annual Reports

Management Systems Implementation Progress
Section 1034(a); signed by Secretary 6/3/93.
Reviews the establishment of multiple management systems in the States.

Motor-Fuel Tax Enforcement Activities
Section 1040(d); signed by Secretary 7/29/93.
Progress report on IRS and the States effort to pursue highway use tax evasion.

Applied Research and Technology Progress
Section 6005(a); signed by Secretary 8/13/93.
Reports on program progress and research findings.

Appendix 2

Rulemaking Published in 1993

Proposed Rules

Engineering and traffic operations: Speed limit enforcement certification
(58 *Federal Register* (FR) 186)
Published 1/4/93

Manual of Uniform Traffic Control Devices (MUTCD): Work zone traffic control standards revision (58 FR 288)
Published 1/5/93

ISTEA Implementation: Safety belts and motorcycle helmets compliance and transfer of funds for noncompliance
(58 FR 4622)
Published 1/15/93

Longer Combination Vehicle (LCV) operators: Mandatory minimum training requirements for operators of LCVs (58 FR 4638)
Published 1/15/93

Clean Air Act Conformity for Transportation Plans, Programs, and Projects issued by the Environmental Protection Agency (EPA) with Federal Highway Administration (FHWA) concurrence (40 Code of Federal Regulations 51)
Published 1/11/93

Scenic Byways: Meeting of Advisory Committee announced to develop and recommend minimum criteria and standards for use by State and Federal agencies in designating highways as scenic byways (58 FR 11658)
Published 2/26/93

Design Standards: Acceptability of roadside barriers and safety appurtenances for use on Federal-aid projects (58 FR 6914)
Published 2/3/93

Truck Size and Weight: Restrictions on the operation of LCVs and certain Commercial Motor Vehicles (CMVs) combinations
(58 FR 11450)
Published 2/25/93

Construction: Erosion Control Guidelines for States to follow when carrying out Federal-aid (58 FR 11814)
Published 3/1/93

Metropolitan Planning (58 FR 12064)
Published 3/2/93

Statewide Planning (58 FR 12084)
Published 3/2/93

Management Systems (58 FR 12096)
Published 3/2/93

Training: For all entry level drivers of CMVs (58 FR 33874)
Published 6/16/93

Federal Motor Carrier Safety Regulations: Transportation of Hazardous Materials (58 FR 33418)
Published 6/17/93

State Compliance with Commercial Drivers License
(58 FR 34344)
Published 6/24/93

Federal Motor Carrier Safety Regulations: Intermodal Transportation (58 FR 37895)
Published 7/14/93

Removal of Obsolete and redundant Right-of-Way Requirements
Published 7/21/93

Final Rules

Payment Procedures: Reimbursement for temporary matching fund waiver (58 FR 6914)
Published 2/2/93

Roadside Barriers and Safety Appurtenances: Enhancements to roadside barriers and other safety appurtenances to accommodate vans, mini-vans, and four-wheel drive vehicles
(58 FR 38293)
Published 7/16/93

Construction: Amended regulations on reimbursement for construction engineering costs to comply with ISTEA (58 FR 39142)
Published 7/21/93

General Materials Requirements: Amended regulations on Buy America, to include iron and coating of covered products, and convict-produced materials to comply with requirements in ISTEA (58 FR 38973)
Published 7/21/93

Uniform Relocation Assistance and Real Property Acquisition Regulation for Federal and federally assisted programs (58 FR 26070)
Published 4/30/93

Bridge Inspection Frequency: The FHWA issued a final rule establishing a 4-year maximum frequency for the inspection of bridges granted an exemption by the FHWA (58 FR 52663)
Published 10/12/93

Metropolitan and Statewide Planning: The FHWA and the Federal Transit Administration (FTA) joint regulations governing the development of statewide and metropolitan plans and programs (58 FR 58040)
Published 10/28/93

Transportation Conformity: The EPA issued final rule with the FHWA and FTA concurrence. Regulation requiring that planning for highway and transit systems is consistent with State air quality plans. (58 FR 62188)
Published 11/24/93

Appendix 3

ISTEA-Related Publications Issued in 1993

The National Highway System, The Backbone of America's Intermodal Transportation Network
FHWA-PD-94-002, HPD-1
Published 10/93

Control of Outdoor Advertising—Under the Intermodal Surface Transportation Efficiency Act
FHWA-PD-045, HRW-1
Published 08/93

America on the Move
FHWA-PL-93-016, HPP-24
Published 08/93

A Report on Stewardship—Under ISTEA Program Efficiencies
Report OPR-E93-1, HPR-1
Published 07/93

Building Partnerships—Building Bridges
FHWA-PD-93-048, HEP-42
Published 07/93

Making Air Quality Crystal Clear
FHWA-PD-94-005, HEP-41
Published 10/93

Clean Air Through Transportation: Challenges in Meeting National Air Quality Standards
HEP-41
Published 09/93

Appendix 4

Tables

a. Table: Fiscal Year 1992 Apportionments

b. Table: Fiscal Year 1993 Apportionments

c. Table: Fiscal Year 1994 Apportionments

Table

FY 1992 Federal-Aid Highway Program Apportionments Under P.L. 102-240.

*Before penalties **(Dollars in**

State	I-Con.	I-Maint.	NHS	Bridge	STP	I-Trnfr.	Subtotal
Alabama	13,742	43,334	53,930	35,028	69,096	0	215,130
Alaska	0	18,105	44,380	5,311	98,167	0	165,963
Arizona	0	51,247	37,638	5,311	46,549	0	140,745
Arkansas	0	25,115	32,302	28,470	34,948	0	120,835
California	191,015	241,745	244,931	126,880	301,407	8,636	1,114,615
Colorado	14,124	42,443	44,099	19,654	58,571	0	178,892
Connecticut	22,784	30,779	47,750	80,840	46,536	55,617	284,306
Delaware	0	11,703	14,325	5,365	22,195	0	53,588
Dist. of Col.	30,132	11,703	14,887	11,443	17,657	598	86,419
Florida	19,587	85,356	110,668	40,985	176,569	0	433,165
Georgia	36,919	82,798	81,176	34,215	105,475	4,943	345,526
Hawaii	42,538	11,703	14,606	13,432	57,287	0	139,565
Idaho	0	20,691	21,909	5,521	33,781	0	81,902
Illinois	0	80,272	108,983	68,277	150,155	0	407,687
Indiana	0	50,301	61,233	29,491	88,037	2,049	231,110
Iowa	0	32,827	44,099	29,288	58,456	42	164,712
Kansas	0	32,935	40,166	33,791	43,023	0	149,914
Kentucky	13,229	39,247	46,346	27,963	59,816	0	186,601
Louisiana	10,485	41,807	46,627	40,916	44,659	0	184,495
Maine	0	11,703	17,696	14,144	22,511	0	66,054
Maryland	80,972	38,780	44,099	31,727	50,360	5,564	251,502
Massachusetts	437,625	41,388	53,368	97,672	7,213	3,594	640,860
Michigan	19,814	75,004	78,648	57,154	82,824	0	313,444
Minnesota	18,096	43,423	48,874	25,623	64,650	30	200,696
Mississippi	0	27,754	35,111	32,796	35,350	0	131,011
Missouri	0	64,013	68,536	59,935	63,896	0	256,381
Montana	0	36,680	30,897	8,215	39,707	0	115,498
Nebraska	0	19,014	30,055	20,947	42,201	0	112,218
Nevada	0	20,544	21,628	5,311	33,370	0	80,853
New Hampshire	0	11,703	17,134	11,946	23,313	0	64,095
New Jersey	109,971	28,168	73,311	114,045	58,719	15,010	399,224
New Mexico	0	37,712	30,055	5,659	38,946	0	112,372
New York	0	87,621	153,363	212,437	118,136	92,163	663,721
North Carolina	28,438	46,309	71,064	46,222	101,775	0	293,808
North Dakota	0	17,938	21,066	5,311	34,436	0	78,752
Ohio	18,943	90,221	101,680	90,861	97,606	0	399,311
Oklahoma	0	32,541	42,975	35,167	49,725	0	160,408
Oregon	23,309	35,150	34,549	25,168	34,120	2,374	154,670
Pennsylvania	229,521	60,036	115,443	208,976	47,399	0	661,375
Rhode Island	0	11,703	14,606	10,069	22,135	31,845	90,358
South Carolina	12,334	39,685	41,571	19,010	55,244	0	167,844
South Dakota	0	21,888	23,313	8,707	33,216	0	87,123
Tennessee	2,887	58,331	61,795	48,184	62,853	10,935	244,985
Texas	40,951	174,723	191,563	86,169	264,149	0	757,556
Utah	0	37,494	26,684	5,311	30,278	0	99,767
Vermont	0	11,703	15,449	10,722	19,917	0	57,791
Virginia	91,076	65,086	61,514	48,963	54,550	0	321,188
Washington	122,007	49,639	49,436	48,356	37,011	0	306,449
West Virginia	0	18,727	34,549	52,822	23,143	0	129,241
Wisconsin	0	30,987	47,189	29,572	68,477	0	176,226
Wyoming	0	29,028	23,313	5,311	29,506	0	87,158
Puerto Rico *	0	11,703	18,257	11,702	26,637	0	68,298
TOTAL	1,630,449	2,340,506	2,808,846	2,136,398	3,285,756	233,400	12,435,405

T-1992
Demonstration Projects Are Single State Only (SSO) Projects.
Thousands)

Cong.Mit. & Air Q.	Subtotal	Donor Bonus	H.H. Adjust.	Subtotal	Metro. Plng.	Total	Min. Alloc.	Demos SSO	Grand Total
4,130	219,261	10,673	8,817	238,750	1,277	240,028	24,284	11,696	276,008
4,130	170,094	0	32,007	202,100	583	202,684		0	202,684
11,069	151,814	10,491	20,008	182,314	1,844	184,158	48,943	976	234,078
4,130	124,965	4,330	9,320	138,616	583	139,199	48,853	22,240	210,292
122,328	1,236,942	93,287		1,330,229	17,681	1,347,910	135,127	25,636	1,508,673
4,130	183,022	0		183,022	1,651	184,673		232	184,905
19,396	303,702	0		303,702	1,705	305,407		6,352	311,759
4,130	57,718	0	7,017	64,735	583	65,319		0	65,319
4,130	90,550	0		90,550	583	91,133		1,768	92,901
24,648	457,812	41,682		499,494	7,066	506,560	159,083	14,365	680,008
12,765	358,291	17,675	12,849	388,815	2,264	391,079	80,121	8,432	479,632
4,130	143,696	0		143,696	583	144,279		480	144,759
4,130	86,032	0	22,912	108,945	583	109,528		5,632	115,160
40,391	448,078	0	38,739	486,817	5,887	492,703		78,207	570,910
9,289	240,399	13,654	13,408	267,462	1,870	269,331	81,220	7,512	358,063
4,130	168,843	0		168,843	654	169,497	0	3,168	172,665
4,130	154,045	0	25,951	179,996	707	180,703		5,840	186,543
6,062	192,663	9,383	6,222	208,268	887	209,154	10,552	1,728	221,434
4,130	188,625	11,881	15,995	216,501	1,547	218,047	4,030	5,613	227,691
4,130	70,184	3,290	4,262	77,735	583	78,319	1,210	14,968	94,497
25,971	277,473	0		277,473	2,487	279,959		7,688	287,647
33,948	674,808	0	13,596	688,404	3,284	691,689		472	692,161
24,046	337,490	33,389		370,879	4,036	374,915	62,608	9,925	447,448
4,130	204,826	0	25,629	230,456	1,646	232,102		15,755	247,857
4,130	135,142	5,401	18,661	159,203	583	159,787	22,371	2,220	184,378
8,178	264,559	14,225	9,834	288,617	1,932	290,549	56,989	8,960	356,498
4,130	119,629	0	29,525	149,154	583	149,738		1,440	151,178
4,130	116,348	0	14,702	131,049	583	131,633		416	132,049
4,130	84,984	0	234	85,217	633	85,850		5,888	91,738
4,130	68,225	0	7,562	75,788	583	76,371		2,568	78,939
47,551	446,775	0		446,775	4,603	451,378		16,232	467,610
4,130	116,502	0	54,020	170,522	583	171,106		864	171,970
86,889	750,610	0	5,673	756,283	9,801	766,084		28,546	794,630
10,187	303,995	19,745	28,310	352,051	1,745	353,795	65,949	7,628	427,373
4,130	82,882	0	15,010	97,892	583	98,476		5,680	104,156
36,218	435,528	30,825	7,743	474,097	4,622	478,719	98,837	12,627	590,184
4,130	164,538	7,987	15,303	187,828	940	188,768	36,377	7,083	232,229
4,426	159,096	6,813	22,276	188,185	986	189,171	1,258	3,680	194,109
49,832	711,207	0		711,207	5,004	716,212		69,385	785,596
4,827	95,184	0		95,184	583	95,768		4,593	100,361
4,130	171,974	0		171,974	991	172,964		3,096	176,060
4,130	91,254	0	18,849	110,103	583	110,686		0	110,686
9,205	254,190	14,838	19,291	288,319	1,540	289,859	40,094	3,080	333,033
82,040	839,595	55,954		895,550	7,896	903,445	125,464	18,912	1,047,822
4,130	103,897	0	17,682	121,579	916	122,495		872	123,367
4,130	61,921	0	7,551	69,472	583	70,055		1,600	71,655
17,552	338,740	0	19,184	357,923	2,659	360,582		11,160	371,742
13,210	319,659	0		319,659	2,232	321,891		7,168	329,059
4,130	133,371	0	12,463	145,834	583	146,417		24,944	171,361
10,387	186,613	11,680	53,506	251,799	1,711	253,510	56,615	5,720	315,846
4,130	91,288	0	12,499	103,787	583	104,370		1,600	105,970
4,130	72,428	0		72,428	1,476	73,904		0	73,904
826,061	13,261,466	417,203	646,610	14,325,278	116,681	14,441,959	1,159,988	504,647	16,106,594

Table

FY 1993 Federal-Aid Highway Program Apportionments Under P.L. 102-240.

*Before penalties **(Dollars in**

State	I-Con.	I-Maint.	NHS	Bridge	STP	I-Trnfr.	Subtotal
Alabama	10,251	52,242	64,477	39,663	84,758	0	251,391
Alaska	0	21,563	53,060	6,396	117,684	0	198,703
Arizona	0	61,005	45,000	6,396	56,109	0	168,511
Arkansas	0	29,742	38,619	34,041	42,271	0	144,673
California	142,554	288,956	292,835	158,444	355,162	9,310	1,247,260
Colorado	5,432	50,823	52,724	24,279	69,438	0	202,696
Connecticut	11,968	35,786	57,089	73,660	79,246	55,448	313,197
Delaware	0	13,987	17,127	6,461	26,584	0	64,159
Dist. of Col.	22,483	13,987	17,798	14,286	20,605	94	89,751
Florida	16,125	102,390	132,313	46,349	214,141	0	511,318
Georgia	27,549	98,330	97,052	43,587	124,600	4,924	396,041
Hawaii	0	13,987	17,463	14,640	70,078	0	116,168
Idaho	0	24,718	26,194	6,821	40,323	0	98,057
Illinois	0	96,463	130,298	84,476	176,876	0	488,113
Indiana	0	63,216	73,209	35,064	102,760	2,044	276,293
Iowa	0	38,766	52,724	38,326	67,306	40	197,162
Kansas	0	39,842	48,022	40,524	51,101	0	179,488
Kentucky	5,869	47,170	55,410	33,995	70,999	0	213,443
Louisiana	7,820	49,783	55,746	49,476	53,327	0	216,152
Maine	0	13,987	21,157	13,495	30,481	0	79,119
Maryland	0	46,310	52,724	41,513	56,963	5,543	203,053
Massachusetts	776,000	47,834	63,806	121,071	5,090	4,502	1,018,304
Michigan	14,790	89,894	94,030	70,490	97,121	0	366,325
Minnesota	10,489	52,565	58,433	27,320	80,302	30	229,140
Mississippi	0	32,919	41,977	42,467	39,461	0	156,824
Missouri	0	76,359	81,940	82,650	66,009	0	306,958
Montana	0	43,779	36,940	9,998	47,564	0	138,282
Nebraska	0	22,594	35,933	26,107	49,710	0	134,345
Nevada	0	24,668	25,858	6,396	39,881	0	96,803
New Hampshire	0	13,987	20,485	12,572	29,696	0	76,739
New Jersey	82,076	32,049	87,649	136,152	72,494	14,955	425,375
New Mexico	0	45,035	35,933	6,915	46,655	0	134,539
New York	0	103,408	183,358	255,851	141,680	91,809	776,106
North Carolina	21,216	55,402	84,962	62,223	115,064	0	338,868
North Dakota	0	21,408	25,186	6,396	41,297	0	94,287
Ohio	0	108,106	121,567	105,276	120,456	0	455,405
Oklahoma	0	38,509	51,380	43,332	58,819	0	192,040
Oregon	17,629	42,007	41,306	30,574	40,541	1,406	173,463
Pennsylvania	0	71,660	138,022	258,435	48,931	79	517,127
Rhode Island	0	13,987	17,463	14,913	23,542	31,223	101,128
South Carolina	9,248	47,933	49,701	24,476	64,077	0	195,436
South Dakota	0	26,123	27,873	10,165	40,152	0	104,313
Tennessee	2,159	69,184	73,880	60,300	73,401	10,893	289,817
Texas	30,600	210,326	229,029	100,105	317,501	0	887,561
Utah	0	46,049	31,903	9,151	32,317	0	119,420
Vermont	0	13,987	18,470	13,268	23,467	0	69,191
Virginia	0	77,632	73,545	49,329	75,001	0	275,507
Washington	4,430	58,997	59,104	56,042	46,704	0	225,276
West Virginia	0	22,307	41,306	58,536	32,588	0	154,737
Wisconsin	0	37,169	56,418	34,038	83,379	0	211,004
Wyoming	0	34,432	27,873	6,396	35,650	0	104,351
Puerto Rico *	0	13,987	21,828	16,928	29,029	0	81,772
TOTAL	1,218,686	2,797,354	3,358,199	2,569,766	3,928,389	232,800	14,105,194

T-1993
Demonstration Projects Are Single State Only (SSO) Projects.
Thousands)

Cong.Mit. & Air Q.	Subtotal	Donor Bonus	H.H. Adjust.	Subtotal	Metro. Plng.	Total	Min. Alloc.	Demos SSO	Grand Total
4,936	256,327	14,094		270,421	1,529	271,950	23,063	26,901	321,915
4,936	203,639		9,092	212,731	698	213,429		0	213,429
13,225	181,735	8,747	24,557	215,039	2,207	217,247	35,588	2,245	255,080
4,936	149,609	7,104	13,800	170,513	698	171,212	30,860	51,152	253,223
146,273	1,393,533	79,631		1,473,164	21,166	1,494,330	146,143	58,963	1,699,436
4,936	207,632			207,632	1,976	209,608		534	210,142
23,173	336,371			336,371	2,041	338,412		14,610	353,021
4,936	69,095		391	69,486	698	70,184		0	70,184
4,936	94,687			94,687	698	95,386		4,066	99,452
29,448	540,766	33,663		574,429	8,459	582,888	135,967	33,039	751,894
15,251	411,292	19,535	11,322	442,148	2,710	444,858	61,885	19,394	526,137
4,936	121,104			121,104	698	121,802		1,104	122,906
4,936	102,993		8,946	111,939	698	112,638		12,954	125,591
48,258	536,371		60,581	596,952	7,047	603,999		104,044	708,043
11,098	287,391	24,970	12,048	324,409	2,238	326,647	48,441	17,278	392,366
4,936	202,098		9,765	211,863	783	212,647		7,286	219,933
4,936	184,424		8,978	193,402	847	194,249		13,432	207,681
7,242	220,685	15,625	6,021	242,331	1,061	243,393	15,274	3,974	262,641
4,936	221,088	10,236	26,485	257,808	1,852	259,660	4,882	12,909	277,451
4,936	84,055		306	84,361	698	85,059		34,426	119,486
30,574	233,626	10,633	11,993	256,253	2,977	259,229	36,668	17,682	313,580
40,560	1,058,864			1,058,864	3,932	1,062,796		1,086	1,063,882
28,730	395,054	32,508		427,563	4,831	432,394	51,728	22,827	506,949
4,936	234,075		2,502	236,577	1,971	238,548		36,237	274,785
4,936	161,760	6,108	18,003	185,871	698	186,569	9,029	5,106	200,703
9,771	316,729	19,084	20,939	356,752	2,313	359,065	21,155	20,608	400,828
4,936	143,218		21,175	164,393	698	165,091		3,312	168,403
4,936	139,281			139,281	698	139,979		957	140,936
4,936	101,739		2,748	104,488	757	105,245		13,542	118,787
4,936	81,675			81,675	698	82,374		5,906	88,280
56,812	482,188		4,212	486,400	5,510	491,910		37,334	529,244
4,936	139,475		39,681	179,156	698	179,854		1,987	181,841
103,897	880,003		28,699	908,703	11,732	920,435		65,657	986,091
12,171	351,039	17,219	23,406	391,663	2,089	393,751	51,952	18,106	463,809
4,936	99,223		5,853	105,076	698	105,774		13,064	118,838
43,272	498,676	44,311	24,054	567,041	5,533	572,574	65,110	29,043	666,726
4,936	196,976	8,325	14,330	219,631	1,126	220,757	21,027	16,291	258,075
5,777	179,240		19,994	199,234	1,180	200,414		8,464	208,878
59,538	576,665	23,994	97,460	698,119	5,990	704,109	36,392	159,585	900,086
5,767	106,895			106,895	685	107,580		10,563	118,144
4,936	200,372	10,371		210,743	1,186	211,928	4,378	7,121	223,427
4,936	109,249		3,593	112,842	698	113,540		0	113,540
10,997	300,815	17,064	13,654	331,532	1,843	333,375	20,981	7,084	361,440
98,099	985,661	50,615		1,036,276	9,452	1,045,728	79,828	43,498	1,169,053
4,936	124,356		2,142	126,498	1,097	127,594		2,006	129,600
4,936	74,127		446	74,574	698	75,272		3,680	78,952
20,970	296,477	18,809	2,036	317,322	3,183	320,505	69,394	25,668	415,567
15,668	240,944	13,798	72,406	327,147	2,672	329,819	70,188	16,486	416,494
4,936	159,673			159,673	698	160,371		57,371	217,742
12,411	223,415	12,136	59,834	295,385	2,049	297,434	40,526	13,156	351,116
4,936	109,287		4,263	113,550	698	114,248		3,680	117,928
4,936	86,708			86,708	1,766	88,474		0	88,474
987,188	15,092,382	498,580	685,714	16,276,676	139,660	16,416,336	1,080,460	1,085,417	18,582,213

Table

FY 1994 Federal-Aid Highway Program Apportionments Under P.L. 102-240. — Before

*Before penalties **(Dollars in**

State	I-Con.	I-Maint.	NHS	Bridge	STP	I-Trnfr.	Subtotal	Cong.Mit. & Air Q.
Alabama	9,025	52,599	64,139	36,060	87,138	0	248,961	4,910
Alaska	0	21,564	52,781	6,363	116,975	0	197,683	4,910
Arizona	0	59,697	44,764	5,890	56,822	0	167,173	13,186
Arkansas	0	30,358	38,416	27,827	47,329	0	143,930	4,910
California	98,130	283,769	291,297	163,323	351,325	9,264	1,197,109	145,100
Colorado	0	50,551	52,447	23,892	69,365	0	196,254	4,910
Connecticut	8,230	35,127	56,790	68,446	84,205	55,167	307,965	23,106
Delaware	0	13,919	17,037	6,427	26,447	0	63,830	4,910
Dist. of Col.	15,480	13,919	17,705	13,375	21,334	579	82,392	4,910
Florida	0	102,437	131,618	45,325	213,279	0	492,659	29,362
Georgia	14,711	98,377	96,542	44,266	122,517	4,887	381,300	15,207
Hawaii	0	13,919	17,371	18,163	66,119	0	115,572	4,910
Idaho	0	25,033	26,056	6,363	40,106	0	97,558	4,910
Illinois	0	96,719	129,614	92,347	166,927	0	485,607	48,118
Indiana	0	63,024	72,824	35,288	101,705	23	272,864	11,066
Iowa	0	38,502	52,447	38,405	66,754	0	196,108	4,910
Kansas	0	39,455	47,770	40,699	50,639	0	178,563	4,910
Kentucky	8,382	47,550	55,119	33,839	70,000	0	214,890	7,221
Louisiana	0	49,771	55,453	51,698	50,316	0	207,238	4,910
Maine	0	13,919	21,046	15,235	28,495	0	78,695	4,910
Maryland	0	46,020	52,447	51,966	46,063	15,540	212,036	30,485
Massachusetts	772,000	47,312	63,471	111,064	15,950	625	1,010,422	40,443
Michigan	9,726	89,490	93,536	70,999	95,696	0	359,447	28,570
Minnesota	0	52,857	58,126	25,286	81,248	0	217,517	4,910
Mississippi	0	33,010	41,757	40,984	40,281	0	156,032	4,910
Missouri	0	74,902	81,510	85,668	63,302	0	305,382	9,743
Montana	0	43,297	36,746	10,159	47,367	0	137,570	4,910
Nebraska	0	22,455	35,744	26,293	49,159	0	133,652	4,910
Nevada	0	24,517	25,722	6,363	39,704	0	96,306	4,910
New Hampshire	0	13,919	20,377	12,344	29,705	0	76,345	4,910
New Jersey	56,497	31,103	87,189	118,584	89,782	12,506	395,661	56,647
New Mexico	0	44,507	35,744	7,002	46,593	0	133,847	4,910
New York	0	102,094	182,395	254,497	141,797	91,343	772,127	103,064
North Carolina	14,610	56,442	84,516	64,884	110,149	0	330,600	12,136
North Dakota	0	21,272	25,054	6,363	41,114	0	93,803	4,910
Ohio	15,345	106,276	120,928	103,966	121,896	0	468,411	43,146
Oklahoma	0	38,049	51,111	41,708	60,200	0	191,068	4,910
Oregon	0	42,103	41,089	35,763	34,626	23	153,604	5,760
Pennsylvania	0	73,692	137,297	257,068	46,336	0	514,393	59,365
Rhode Island	0	13,919	17,371	16,901	21,334	30,803	100,328	5,750
South Carolina	6,363	47,431	49,440	27,364	60,997	0	191,595	4,910
South Dakota	0	25,587	27,727	9,158	41,315	0	103,787	4,910
Tennessee	1,487	68,611	73,492	60,742	72,499	10,839	287,670	10,966
Texas	21,091	209,884	227,826	99,606	315,245	0	873,652	97,313
Utah	0	46,289	31,735	9,866	30,909	0	118,799	4,910
Vermont	0	13,919	18,373	13,543	23,001	0	68,836	4,910
Virginia	0	77,548	73,158	49,746	73,641	0	274,093	20,909
Washington	10,204	59,324	58,794	54,656	46,949	0	229,927	15,622
West Virginia	0	22,475	41,089	54,357	36,021	0	153,942	4,910
Wisconsin	0	37,153	56,121	33,645	83,004	0	209,923	12,322
Wyoming	0	34,303	27,727	6,363	35,423	0	103,816	4,910
Puerto Rico *	0	13,919	21,714	16,711	29,008	0	81,352	4,910
TOTAL	1,061,281	2,783,888	3,340,562	2,556,849	3,908,114	231,599	13,882,293	982,100

T-1994
Penalties — Demonstration Projects Are Single State Only (SSO) Projects.
Thousands)

Subtotal	Donor Bonus	H.H. Adjust.	Subtotal	Metro. Plng.	90% Pymt Adj.	Total	Min. Alloc.	Demos SSO	Grand Total
253,872	17,041		270,913	1,521	3,755	276,189	32,169	26,901	335,259
202,593		16,349	218,942	695		219,637		0	219,637
180,359	7,368	25,244	212,970	2,196		215,167	35,823	2,245	253,234
148,840	8,435	14,777	172,053	695		172,748	33,203	51,152	257,103
1,342,209	67,225	11,052	1,420,487	21,058		1,441,545	189,625	58,963	1,690,132
201,165		1,968	203,132	1,966		205,099		534	205,632
331,071			331,071	2,031		333,101		14,610	347,711
68,740		1,389	70,129	695		70,824		0	70,824
87,302			87,302	695		87,997		4,066	92,064
522,021	25,893		547,914	8,416	4,383	560,713	161,433	33,039	755,185
396,507	20,894	9,291	426,692	2,696		429,388	70,827	19,394	519,609
120,482			120,482	695		121,177		1,104	122,281
102,468		13,357	115,826	695		116,520		12,954	129,474
533,725		70,151	603,876	7,011		610,887		104,045	714,932
283,930	36,898	677	321,504	2,227		323,731	50,566	17,278	391,574
201,018		12,397	213,415	779		214,195		7,286	221,481
183,473		11,534	195,007	842		195,850		13,432	209,282
222,111	19,404	12,601	254,116	1,056		255,172	5,875	3,974	265,022
212,148		38,820	250,968	1,842		252,810		12,909	265,719
83,605		737	84,342	695		85,037		34,426	119,463
242,520	8,424	14,972	265,916	2,962		268,878	44,734	17,682	331,294
1,050,865			1,050,865	3,912		1,054,777		1,086	1,055,862
388,017	35,687		423,703	4,806		428,510	69,466	22,827	520,803
222,427			222,427	1,961		224,388		36,237	260,625
160,942	6,694	14,952	182,589	695		183,284	15,901	5,106	204,290
315,125	19,590	17,301	352,015	2,301		354,317	27,936	20,608	402,860
142,480		16,236	158,716	695		159,410		3,312	162,722
138,562			138,562	695		139,257		957	140,214
101,217		3,753	104,970	753		105,723		13,542	119,266
81,256		708	81,964	695		82,658		5,906	88,565
452,309		32,583	484,891	5,482		490,373		37,334	527,707
138,757		42,274	181,031	695		181,726		1,987	183,713
875,191		21,506	896,697	11,673		908,369		65,657	974,026
342,736	15,861	31,370	389,967	2,078		392,045	57,657	18,106	467,808
98,714		7,336	106,049	695		106,744		13,064	119,808
511,557	54,444	24,083	590,085	5,505		595,590	47,632	29,043	672,265
195,979	7,814	23,743	227,536	1,120		228,656	15,350	16,291	260,298
159,364	6,983	17,837	184,184	1,174		185,358	12,589	8,464	206,411
573,758	21,280	101,701	696,739	5,960		702,698	53,344	159,585	915,627
106,078			106,078	682		106,760		10,563	117,324
196,505	8,058	11,487	216,050	1,180		217,229	24,877	7,121	249,227
108,698		12,746	121,443	695		122,138		0	122,138
298,636	17,442	22,411	338,489	1,834		340,323	17,289	7,084	364,696
970,965	44,312		1,015,277	9,404		1,024,681	119,393	43,498	1,187,572
123,709		7,997	131,706	1,091		132,797		2,006	134,803
73,747		114	73,861	695		74,555		3,680	78,235
295,002	17,771		312,773	3,167		315,939	77,643	25,668	419,251
245,549	12,388	63,166	321,103	2,658		323,761	27,350	16,486	367,598
158,853			158,853	695		159,548		57,371	216,919
222,245	16,104	56,265	294,614	2,038		296,652	43,936	13,156	353,744
108,726		3,375	112,101	695		112,796		3,680	116,476
86,262			86,262	1,757		88,020		0	88,020
14,864,392	496,010	788,258	16,148,660	138,950	8,137	16,295,748	1,234,620	1,085,418	18,615,786

*U.S. G.P.O.:1994-301-717:80559

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**Federal Highway
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